

Title (en)

Process and apparatus for producing a gas which is substantially free of uncombined oxygen from air.

Title (de)

Verfahren und Apparat zur Herstellung eines Gases aus Luft, das im wesentlichen frei von ungebundenem Sauerstoff ist.

Title (fr)

Procédé et appareil pour la production d'un gaz, ne contenant qu'en substance d'oxygène libre, provenant de l'air.

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EP 0400924 A2 19901205 (EN)

Application

EP 90305739 A 19900525

Priority

CA 600923 A 19890529

Abstract (en)

A process and an apparatus for producing a substantially oxygen-free gas from air are disclosed. The process involves reducing the oxygen content of air in a first step (e.g. in apparatus 10) to 0.5% or more by volume by a non-cryogenic physical separation technique, e.g. by means of the use of a molecular sieve or a diffusion membrane designed to separate oxygen from nitrogen. In a second steps (e.g. in chamber 12) the oxygen remaining in the resulting oxygen-reduced gas is substantially eliminated by contacting the oxygen-reduced gas with an oxidizable material that reacts readily with the oxygen (under suitable conditions) without introducing oxidizing materials or pollutants into the gas. The preferred oxidizable material is a porous bed (21) of carbon particles heated to a temperature of 700-900 DEG C or methane as a gaseous fuel. These materials introduce carbon monoxide and (in the case of methane) water vapour into the substantially oxygen-free gas. Carbon monoxide is an acceptable non-oxidizable gas for many purposes and, if necessary, the water vapour can be removed by condensation. The process can produce an inexpensive gas mixture containing less than about 0.1% by volume of oxygen which is suitable for many industrial purposes, e.g. as the heat transfer medium for a contained arc plasma torch (41) used for heating materials (44) containing aluminum or aluminum alloys.

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